HOW TO ESTABLISH AND OPERATE AN ILLEGAL DUMPING PREVENTION AND RESPONSE PROGRAM

MARCH 2003

PREPARED FOR:



IOWA DEPARTMENT OF NATURAL RESOURCES ENERGY AND WASTE MANAGEMENT BUREAU

502 E. 9TH ST., DES MOINES, IA 50319-0034 (515) 281-8489

PREPARED BY:



REED, STOWE & YANKE, A DIVISION OF R.W. BECK INC.

5806 Mesa Drive, Suite 310, Austin, TX 78731 (512) 450-0991

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ABBREVIATIONS AND DEFINITIONS

Authors Reed, Stowe & Yanke, a division of R.W. Beck, Inc. Bulky Items Furniture, mattresses, white goods, large items, etc.

C & D Construction and Demolitions debris

COGs Councils of Governments
Army Corps Army Corps of Engineers

DNR Iowa Department of Natural Resources

FTE Full-time-equivalent employee

H-GAC Houston-Galveston Area Council

HHW Household Hazardous Waste

ISAC Iowa State Association of Counties

ILC Iowa League of Cities

ISOSWO Iowa Society of Solid Waste Operators

IRA Iowa Recycling Association

KAB Keep America Beautiful

KIB Keep Iowa Beautiful

Meth Lab Methamphetamine Laboratory

MWA Metro Waste Authority

Residential Waste Non-hazardous household waste

S.E.P. Supplemental Environmental Projects
SOLV Stop Oregon Litter and Vandalism

S.T.O.P. Stop Trashing Our Precinct

SWPA Solid Waste Planning Agencies

TCEQ Texas Commission on Environmental Quality

U.S. EPA United States Environmental Protection Agency

White Goods Household appliances such as refrigerators and washing machines

BACKGROUND

In recent years there has been an increased awareness with regard to illegal dumping and the impact it is having on both rural and urban areas in the State of Iowa. As a result, local governments across the State of Iowa, as well as throughout the United States, have started to take action to combat illegal dumping.

Many factors contributed to the conclusion that illegal dumping is a growing problem in the State of Iowa including; several newspaper articles, topics at professional conferences, roundtable discussions, and the 2002 Iowa Department of Natural Resources (DNR) Illegal Dumping Survey.

Increased Media Coverage

Several newspapers and at least one television news station have covered illegal dumping related stories in the past two years. Although local media has traditionally covered "human interest" stories or topics that directly effect their community, not all local media outlets have believed illegal dumping to be newsworthy in the past. The shift in the perception that illegal dumping is a problem can possibly be attributed to a greater awareness of environmental issues as well as increases in the frequency and magnitude of illegal dumping in Iowa.

Professional Conferences Taking Notice of Illegal Dumping

During 2002 and 2003 several annual professional conferences have chosen to include illegal dumping as a discussion topic during the main-body conference or breakout session; including the Iowa Society of Solid Waste Operators (ISOSWO), Iowa State Association of Counties (ISAC), and the Iowa Recycling Association (IRA). Many of these conferences invite representatives from successful environmental enforcement programs in and around the State of Iowa to speak about what can be done to combat illegal dumping. **These conferences traditionally, choose topics that are current "hot button" issues in the field of public administration.**

Roundtable Discussions on Illegal Dumping

Representatives from various solid waste planning authorities, local governments, state associations, and DNR, came together over the past year in a series of formal and informal roundtable discussions to discuss the problem of illegal dumping. Some conclusions that were drawn from the discussions included a general sentiment that illegal dumping is a serious problem in most rural and urban areas as well as the belief that further study into how a successful illegal dumping program should be run in Iowa was needed.

2002 - DNR Illegal Dumping Survey

In 2002, the DNR surveyed a total of 706 public administrators at the city and county level, 472 county representatives and 234 city representatives, respectively. The participants were chosen because of their working relationship with their city/county's illegal dumping enforcement program. A copy of the DNR's Illegal Dumping Survey is located in Appendix A.

By choosing a sample population that focuses on departments associated with illegal dumping enforcement and the correspondingly high response rate, the information gained can be viewed as a fair representation of city/county staff attitudes and perceptions throughout the State of Iowa.

The survey garnered a 43 percent response rate and included responses from approximately 20 different types of city and county departments, including:

- City Administrator
- City Clerk
- City Manager
- City Supervisor
- City Mayor
- City Maintenance Supervisor
- City Police Chief/Sergeant
- City Public Works Director
- City Inspector
- County Sheriff/Deputy
- County Engineer/Assistant

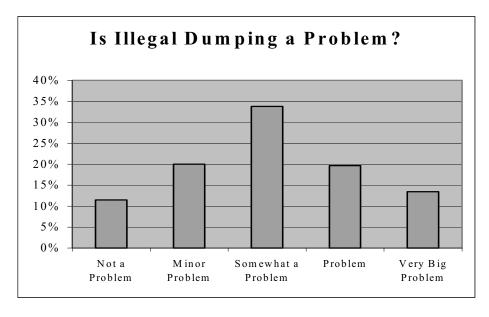
- County Environmental Health Director/Staff
- County Public Health Director/Staff
- County Attorney
- County Road Department Staff
- County Planning Director
- County Sanitarian
- County Zoning Administrator
- County Superintendent
- Solid Waste Commission Manager

The 325 individuals who returned a survey to the DNR answered a variety of questions on their view of the problem of illegal dumping in their community. Since the survey was tailored to judge the attitudes and perceptions of local governments in Iowa, questions were aimed at finding out:

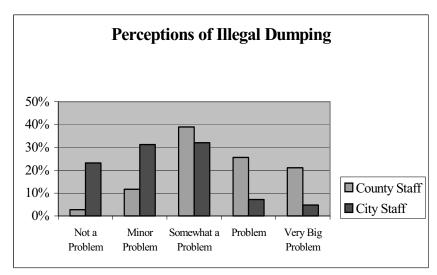
- 1. Is illegal dumping a problem in your community?
- 2. What kinds of materials are most often dumped in your community?
- 3. Where are these materials most often dumped in your community?

1. Is illegal dumping a problem in your community?

As the chart Below indicates, approximately 66 percent of total respondents believe that illegal dumping is at least somewhat of a problem. Over 20 percent of respondents who believed illegal dumping to be a problem also believed that illegal dumping is a severe problem in their community.



Further examination of the survey data reveals that county officials believe that illegal dumping is more of a problem than city officials. As the graph titled "Perceptions of Illegal Dumping" indicates, the majority of city staff consider illegal dumping a minor problem while a greater majority of county staff believe that illegal dumping is a considerable problem in their community.

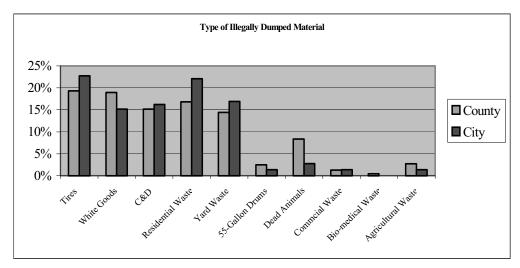


Also included in the survey was an optional free response section for each respondent. The objective of this section was to obtain any suggestions or concerns about illegal dumping in their community. Over 18 percent of respondents included additional information. Located below are a few examples of these responses:

- "The increase of Methamphetamine Labs ("Meth Labs") and the increase of waste from drug users such as needles, propane, battery acid and the unknown items left laying around are a serious problem in our city."
- "In our case, illegal dumping has not been a major problem. We've discussed installation of a camera, but have been usually able to track down individuals. We order them to clean up the material or be fined. This is a more serious problem on country gravel roads."
- "We are a very small town and keep the town very clean. Any information on how to declare a house (property) condemned would be helpful."
- "Our city has a very little problem with illegal dumping. Our yard waste sites are monitored, and since people see other people in our small town, we don't have a very big problem with any type of junk disposed in the city. The county ditches or outlying areas are much worse."
- "I see things dumped in the county all the time. We need to come up with solutions for tires. People will spend five bucks for a lottery ticket but not to dispose of their tires."

2. What kinds of materials are most often illegally dumped in your community?

The DNR also judged the types of materials that are most commonly dumped in cities and counties. Located on the follow page is a graph comparing city and county responses, it should be of note that respondents could check more than one box regarding the types of waste that were applicable to their community.

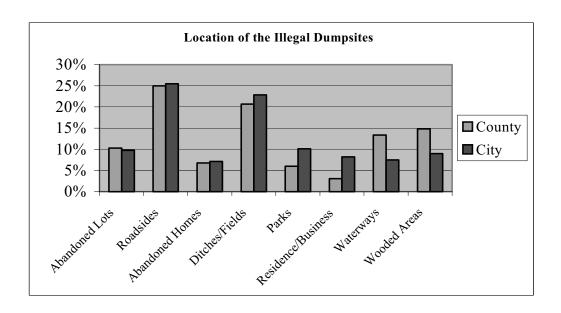


The findings indicate that the majority of material dumped at both the city and county level are scrap tires, white goods, C&D debris, residential waste, and yard waste.

The illegal disposal of these materials should not be categorized as "littering", rather should be considered "illegal dumping". This material can be highly hazardous to the health and welfare of citizens and the environment, as well as an eye-sore and should be viewed as a danger to the community.

3. Where are these materials most often dumped in your community?

Since many illegal dumping programs focus on the cleanup of illegal dumpsites during the investigations process, the DNR sought to gather data revealing where the illegal dumping is occurring throughout the state. Located below is a graph comparing both county and city responses, it should again be noted that respondents could check all areas that were applicable to their community.



As the chart above indicates, the majority of illegal dumping occurs in ditches and fields, along roadsides, and in heavily wooded areas. These types of locations are often hidden or out of sight of law enforcement.

The data from the DNR survey is subjective, reflecting the opinions and thoughts of city and county staff surveyed. The findings from this survey are intended to add to the general discourse on this issue and enhance the field of knowledge on this topic in Iowa.

PURPOSE OF THE GUIDE

In addition to having a community that is cleaner and safer for all residents, there are several other important reasons why a local government will benefit from using this resource guide to develop an illegal dumping prevention and response and prevention program. They are as follows:

- The city or county will better understand the magnitude of illegal dumping within its community. As a result, the local government will become more aware of the time, resources, and money that are currently being expended by the city or county in combating illegal dumping, that, until now, have been "hidden" within various departmental budgets (enforcement costs, prosecution costs, cleanup costs, etc.).
- The local government will have a program that provides a structured and organized manner in which to address illegal dumping. This will result in a more coordinated effort among the various city and/or county departments that are involved in the local government's environmental enforcement program. It will also provide a centralized location where citizens can call and report illegal dumping activities.
- A structured program will allow the local government to monitor the results of its environmental enforcement program to assist in measuring its success. Items that can be monitored would include: number of arrests, number of convictions, number of illegal dumpsites cleaned-up, amount of fines collected, "avoided" cleanup costs as a savings to the city, etc.
- Finally, an environmental enforcement program that is coordinated with the community's other solid waste programs (solid waste collection services, recycling, yard waste collection, household hazardous waste collection, etc.) will assist in decreasing the amount of illegal dumping within that community.²

RESOURCE GUIDE FORMAT

The resource guide is structured to provide separate sections for each of the six key elements associated with an effective environmental enforcement program.

¹ The term "city", "municipality", "county" or "local government" will be used interchangeably throughout this guidebook. However, the authors would emphasize that this guidebook will prove beneficial to all governmental agencies and non-profit organizations that desire to establish an illegal dumping prevention and response program.

² By educating residents that illegal dumping is wrong, and at the same time educating them as to how to properly dispose of their waste, using the community's existing solid waste programs, the community will realize a decrease in illegal dumping. The importance of integrating a community's environmental enforcement program with the community's other solid waste programs cannot be over-emphasized.

The elements are identified as follows:

- 1. POLITICAL BUY-IN/PLANNING
- 2. MANAGEMENT STRUCTURE
- 3. EDUCATION
- 4. ENFORCEMENT AND PROSECUTION
- 5. CLEANUP
- 6. PROGRAM ADMINISTRATION

Each of these elements will be described in detail in the following pages of this resource guide. The resource guide will discuss how to address each of these elements so local governments can develop effective and successful illegal dumping enforcement programs. To have an <u>effective</u> illegal dumping enforcement program, each of these six elements must be successfully addressed.

Every local government is different; therefore, the above elements should be addressed in a manner that meets the unique needs of each particular community. For instance, an environmental enforcement program will most likely have a different focus if it is being implemented for a city versus a county, or a rural area versus an urban area. However, the ultimate goal for each community should be the same: coordinating these six elements to stop illegal dumping in the community. The authors emphasize that there is not just "one way" to operate an environmental enforcement program. Based on each local government's particular situation and needs, different solutions for addressing each of the six elements may be appropriate for different communities. For instance, not all local governments will use the same approach in educating its citizens.

The authors understand that some people reading this resource guide will already have environmental enforcement programs in place. For those individuals, the authors would encourage them to review the resource guide to make sure that they are thoroughly addressing each of the six elements listed above. To the extent that modifications to their program are required, the resource guide may be used to assist in providing insight with regard to the development of potential ideas and solutions.

Finally, the authors would mention that while this resource guide is being developed for the DNR and the local governments within the State of Iowa, the findings and recommendations within this resource guide are applicable to all local governments in the United States.

FINDINGS AND RECOMMENDATIONS

The purpose of this project was to create a resource guide that local governments can use in the State of Iowa to help establish and operate a successful illegal dumping enforcement program. During the course of this study, the authors interviewed in excess of 40 individuals who provided information regarding their views of illegal dumping as well as overviews of their particular program.

In addition to the creation of this resource guide, the authors were asked to include a summary of findings and recommendations for local governments as well as the State of Iowa to consider for implementation. Based on interviews with illegal dumping program officials, an examination of the 2002 DNR Illegal Dumping Survey, and the author's experience with regard to illegal dumping at a national level, the authors have provided the following findings and recommendations.

Development of regional illegal dumping enforcement programs.

In order for local governments to more effectively address illegal dumping in their community, the establishment of regional illegal dumping efforts should be explored. Local governments could study the feasibility of creating a 28e, interlocal agreement, between neighboring communities to create a regional illegal dumping enforcement program. This could be established in much the same manner as regional hazardous material response teams, which have been established in various counties and cities throughout Iowa.

Training seminars for local environmental enforcement officials on illegal dumping hazards and enforcement procedures.

Training for local and DNR illegal dumping enforcement officers, attorneys, judges, and county/city management could be implemented as a way of informing city/county staff of the hazards and enforcement procedures of illegal dumping. As described in Section 3 – Education, numerous training videos and sessions are available throughout the country.

Strengthening of state/local laws associated with illegal dumping.

During the course of the authors' interviews and research, numerous state/city/county staff expressed a desire for strengthening state and local laws associated with illegal dumping. The research also revealed that many local governments have not updated local illegal dumping laws, since state lawmakers have increased penalties for illegal dumping. The authors would recommend local governments examine current state laws associated with illegal dumping and draft ordinances accordingly. The authors would also like to recommend that state fines and laws associated with illegal dumping be reexamined and compared to laws of surrounding states.

Creation of a regional illegal dumping hotline.

A number of individuals have expressed a desire to see a regional illegal dumping hotlines established for concerned citizens who would like to report illegal dumping. The authors recommend that a hotline could be implemented through the regional solid waste management planning agencies and local governments as described in Section 3 – Educational Materials.

Development of regional/local illegal dumping task force.

Based on our interviews with city and county staff and the authors' experience with illegal dumping nationally, it is recommended that local governments in the State of Iowa consider the development of an illegal dumping task force at the regional and local levels. Communities should consider implementing an illegal dumping task force through the provisions of Section 28e which allows for the creation interlocal agreements between governmental entities. As described in Section 4 – Enforcement and Prosecution, a task force can be implemented to foster communication, and share ideas or resources.

Exploration into the feasibility of alternative funding options to assist local illegal dumping enforcement programs

Numerous city and county staff have expressed an interest in the feasibility of alternative funding options to assist in the operation of local environmental enforcement programs. As described in various sections throughout the resource guide, portions of numerous funding mechanisms could be dedicated to aiding illegal dumping programs. One possible option to address this issue would be the passage of a state law dedicating a small increase in the tipping fee to illegal dumping enforcement programs.

Creation of illegal dumping databases

During the course of this study, the authors found a strong desire among environmental enforcement officers for regional or local databases that would allow them to identify chronic illegal dumpsites or repeat illegal dumpers. The authors would like to suggest governments create a regional electronic database that could be accessed on a secure basis by illegal dumping enforcement officers. As described in Section 4 – Enforcement and Prosecution, databases can include a variety of information that could assist illegal dumping enforcement officers in tracking illegal dumping.

Follow-up training programs on illegal dumping

Numerous city, county and DNR staff have expressed an interest in the possibility for holding additional training programs around the state to reinforce and inform new city and county staff regarding the many facets of an illegal dumping prevention and response program. Potentially, these training programs can be coordinated at regional and local levels and cover much of the information discussed in the resource guide.

COMMENTS CONCERNING THE GUIDEBOOK

We are confident that this resource guide will be of benefit to local governments throughout the State of Iowa in reducing the amount of waste that is illegally dumped in the state. The authors welcome and encourage any comments or suggestions with regard to the resource guide. If you have any questions or comments please contact:

Mr. Dave Yanke
Senior Director
Reed, Stowe & Yanke, a division of R.W. Beck Inc.
5806 Mesa Drive, Suite 310
Austin, Texas 78731
(512) 450-0991 (phone)
(512) 450-0515 (fax)
dyanke@rwbeck.com (e-mail)

POLITICAL BUY-IN

In order to develop an effective environmental enforcement program, it is essential that the local politicians (city council members, county supervisors, etc.) and senior level management (city manager, county judge, etc.) within the local government be 100% committed to the program. It is also important that the citizens and the local government's employees <u>understand</u> that the elected officials and senior management are 100% behind the program.

Support for the program, by the elected officials and senior management, must be shown in the following manner:

POLITICAL SUPPORT AND BACKING MUST BE PROVIDED FOR THE LOCAL GOVERNMENT STAFF MEMBER(S) WHO ARE IMPLEMENTING THE PROGRAM.

SUFFICIENT MONETARY FUNDING MUST BE MADE AVAILABLE FOR THE PROGRAM.

SUFFICIENT PERSONNEL MUST BE MADE AVAILABLE IN ORDER TO EFFECTIVELY IMPLEMENT AND OPERATE THE PROGRAM.

ADEQUATE EQUIPMENT MUST BE PROVIDED FOR THE PROGRAM.

Often it is the local government's staff and/or citizens' groups that must convince the elected officials and/or senior level management that there is a need for an environmental enforcement program. Convincing elected officials and senior management that limited resources should be expended to establish a new government program can sometimes be a daunting task. However, there are a number of ways in which staff and/or citizens groups can educate their elected officials and senior level

management with regard to the need for an environmental enforcement program. Examples include:

• **Photographs** – Photographs can be taken of some of the illegal dumpsites within the city or county. These photographs should show the types of waste that are being illegally dumped, as well as the magnitude (i.e. size) of the illegal dumpsites. Photographs are a very effective tool for raising an elected official's awareness, and gaining their political support to develop an environmental enforcement program.



This picture shows several junked cars in rural Marion County, Iowa. This picture was taken from a plane by the Marion County Sheriff's Department during an aerial investigation of an illegal Methamphetamine Lab.

• Maps – Maps are another tool to use in gaining the necessary political support for an environmental enforcement program. City staff can put a map of the city on posterboard and then insert pins at each location of an illegal dumpsite within the city limits. This method has proven especially effective when a number of illegal dumpsites are located near a city council member's or county commissioner's home or office. Often the elected official may not be aware that an illegal dumpsite is nearby.

Q Did you know? There are more than 148 species of fish in Iowa's lakes and rivers. Illegal dumping in those waters can potentially harm these fish.

• Press coverage in other regions – Press coverage can be a key motivating factor for elected officials. Many elected officials have benefited from positive press coverage, including news articles and television features, regarding local efforts to stop illegal dumping through



Meth Labs – Breeding ground for Illegal Dumping?

"Meth Labs" or clandestine drug labs are illegal drug laboratories that produce drugs for sale illegally. Methamphetamines as discussed in Section 5, produce enormous amounts of hazardous waste. Often, this waste is illegally dumped and highly toxic.

Marvin Van Haaften, recently appointed Drug Control Policy Director by Governor Tom Vilsack, believes that these clandestine drug labs are a breeding ground for illegal dumping. As he recounted, during his tenure as Marion County Sheriff, illegal dumping of junked cars, white goods, and residential waste littered the area around many clandestine drug labs.

enforcement programs and clean ups. By recognizing potential political benefits, elected officials may be more inclined to support these types of programs. Specific examples of news articles are included in Appendix E.

- Other successful programs By informing elected officials that successful enforcement programs are in place in other communities in Iowa and throughout the country, they may be more inclined to develop their own program. Knowing that these types of programs are effective elsewhere can have a positive impact on elected officials who may doubt whether an illegal dumping enforcement program can be effective. Many of the communities with successful programs are highlighted throughout this resource guide.
- Tours of illegal dumpsites Some local governments in the United States have educated their elected officials, with regard to the severity of illegal dumping, by providing a bus tour for elected officials (including the media) to visit some of the illegal dumpsites located throughout the community. It is not uncommon for the elected officials to be unaware of the illegal

dumpsites since they are usually located at the dead-end of city or county roads, located on seldom used roads, or located out of view from the road on either public or private property. A tour of these problem sites can be very effective in capturing the magnitude of the problem that local officials must address.

- Explanation of costs It is important to explain to the political officials that it is very costly to cleanup illegal dumpsites, not to mention the health and safety threats to the local government's employees who cleanup these sites. It has been documented in various individual cases that it costs two to three times more to cleanup illegal dumpsites as opposed to the cost of disposing of solid waste properly.³
- Explanation of changes in landfill regulations The number of sanitary landfills in the State of Iowa has steadily declined since 1992, when changes were made to federal regulations. Changes in federal regulations, which are commonly referred to as *Subtitle D*, have placed more stringent and expensive requirements on landfills. As a result, many landfills, especially small, publicly owned ones in rural areas, have closed over the last several years. Without these

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³ The City of St. Louis spends more than \$1 million, annually, to cleanup illegal dumpsites.

landfills, many communities may lack the disposal options they once had. With fewer landfills, there is a greater likelihood that illegal dumping occurrences will increase, which creates more of a need for environmental enforcement programs.

• Explanation of health and safety issues – Often the elected officials and citizens of a community will not realize the health and safety risks associated with illegal dumping.

Listed below are some of the risks that elected officials should be made aware of:

DRINKING WATER QUALITY ISSUES RELATED TO NON-POINT SOURCE POLLUTION, ESPECIALLY IN AREAS WITH PRIVATE WELLS

FLOODING CAUSED BY DEBRIS/WASTES THAT CLOG STORM WATER MANAGEMENT SYSTEMS, DRAINAGE DITCHES AND WATERWAYS

HABITAT/BREEDING GROUNDS FOR DISEASE-CARRYING VECTORS (E.G. RODENTS AND INSECTS)

DIRECT CONTACT EXPOSURE TO SHARP OBJECTS, MEDICAL WASTES, CAUSTIC SUBSTANCES AND FIRE (ESPECIALLY A RISK FOR CHILDREN PLAYING IN THE AREA)

INDIRECT EXPOSURE TO TOXIC CHEMICALS AND POSSIBLE HAZARDOUS WASTES

INHALING POLLUTANTS CARRIED BY SMOKE FROM DUMP FIRES

For a complete list of potential risks and costs associated with illegal dumping, refer to "Hazards and Negatives Associated with Illegal Dumping" in Appendix A.

When elected officials are educated with regard to these health and safety issues, they can become some of the strongest proponents for the establishment of an environmental enforcement program.

On the Interdepartmental cooperation: "I think the Code Enforcement Commission has been successful in coordinating efforts to fight illegal dumping in our city."

Councilman Matt Walsh – Council Bluffs, Iowa

• Impact on tourism — According to the Iowa Department of Tourism, over 16 million people from around the world visit Iowa each year. These travelers spend over \$4.2

billion per year in the state on a variety of activities including hunting, fishing, boating, camping as well as many other recreational activities. Many tourists are drawn to the natural beauty of Iowa year-round. To ensure that Iowa continues to attract these travelers, it is important to keep these pristine areas clean and free of illegal dumping.

• Serious environmental issue – According to an illegal dumping survey conducted by the Iowa Department of Natural Resources in May 2002, over 66% of the respondents from cities and counties in Iowa believe illegal dumping is a problem in their area. Over 58 percent of the

Q Did you know? The KIB Environmental Enforcement Officer Award was started through a donation from an individual who was fed up with illegal dumping and wanted to reward illegal dumping efforts.

respondents from both cities and counties also believe that local governments have a degree of responsibility to address illegal dumping in their area.

While the buy-in by elected officials and senior management is essential to the development of a successful environmental enforcement program, the success of the program is still not guaranteed once

their buy-in is obtained. It is critical that all city and/or county staff involved in dealing with illegal dumping are committed to the program as well. If there is a breakdown at any level, by the employees charged with implementing the program, the success of the program is jeopardized.

For instance, if a city expends the funds to hire an environmental enforcement officer and provides him with the necessary equipment, but the county attorney does not follow through on the prosecution of people charged with illegal dumping, the success of the program is threatened. For an environmental enforcement program to be effective, it is essential that elected officials commit their support to the involved and that individuals with program, implementing and operating the program diligently follow through on their duties and responsibilities with regard to the program.

PLANNING

Iowa State Association of Counties & Iowa League of Cities

The Iowa State Association of Counties and the Iowa League of Cities are two organizations created to meet the needs of various local government entities.

These associations are available to member governments not only to answer questions regarding various topics, but can be a great resource for governments interested in combating illegal dumping.

Making your voice heard to those who represent you is an excellent way to see that changes are made in government. For example, a larger city or coalition of smaller cities could inform the association of the problem with illegal dumping in their area. This information could perhaps lead to an initiative strengthening the penalty for illegal dumping.

Once the necessary "buy-in" has occurred from the elected officials and senior management of the local government, the next step is for the local government to begin planning how it will structure its environmental enforcement program.

Listed below are the five key elements that must be addressed during the planning stage:

- 1. DETERMINE THE PROPER MANAGEMENT STRUCTURE.
- 2. DETERMINE THE PROCESS FOR EDUCATING ALL PARTIES (CITIZENS, POLICE, PROSECUTORS, JUDGES, ETC.).
- 3. DETERMINE HOW TO ENFORCE AND PURSUE CRIMINAL AND CIVIL LEGAL OPTIONS.
- 4. DETERMINE HOW TO CLEANUP ILLEGAL DUMPSITES.
- 5. DETERMINE HOW TO BEST HANDLE ON-GOING PROGRAM PLANNING AND MANAGEMENT.

These five elements were mentioned in the Executive Summary (along with the Political Buy-In/Planning element). Each of the remaining five elements will be discussed in its own separate section of the resource guide. By reviewing each of these elements within this resource guide, the

 \P Did you know? Over \$4.2 billion dollars are spent by tourists annually in Iowa, many come to enjoy outdoor activities.

reader will be able to begin to formulate ideas as to the best manner in which to address these elements as part of a plan for their local government's environmental enforcement program.

As mentioned earlier, it is important for the city or county to remember that there is no standard "cookie cutter" approach to developing and operating an environmental enforcement program. Just

because two neighboring cities may have different approaches to an environmental enforcement program, it does not mean that one city's approach to operating its program is "right" and the other city's is "wrong." Rather, the bottom line is to determine whether both of the programs are efficient and effective in eliminating and discouraging illegal dumping within their community. If the answer is "yes," then both communities should continue to operate their program in their current format.

An environmental enforcement program that is properly should coordinated with implemented be community's existing solid waste services. Bv implementing an environmental enforcement program, in coordination with the provision of cost-effective alternatives for disposal of solid waste and recyclables, the community will realize a decrease in illegal dumping. It has been documented in numerous studies that much illegal dumping results from individuals who want to "do the right thing," but do not have access to affordable and convenient solid waste disposal alternatives, or are not aware of how to properly dispose of their solid waste. By educating citizens about why illegal dumping is wrong (it is a crime!) and costs associated with illegal dumping, and then explaining how to properly dispose of solid waste, the community's illegal dumping problems will begin to decrease.



Case Study: Metro Waste Authority and The City of Des Moines, Iowa: Cooperation to fight illegal dumping.

The Metro Waste Authority (MWA) is currently working with the City of Des Moines to assess the feasibility of establishing an environmental enforcement officer position for the Metro Waste Authority's planning region. Director Tom Hadden, reports that this would be a big step forward in combating illegal dumping in the region and careful, prudent planning is necessary to ensure the success of the program. Director Hadden also reports that the MWA is also working with city staff to ensure support of such a program.

The work of the MWA and the City of Des Moines is a prime example of the careful planning necessary to ensure not only support from city staff in various departments, but open lines of communication for programs which might be established in the future.

SYNOPSIS

- Political support is necessary to ensure sufficient personnel, equipment, and monetary funds are made available to the program.
- Elected officials and senior level management may be persuaded to support environmental enforcement programs:
 - through the use of photos, maps, and tours of existing illegal dumpsites in the area
 - when informed about the health and safety risks associated with illegal dumping
 - when made aware of cleanup costs, which are 2-3 times more than legal disposal
- Planning must address five key elements: management structure, education, enforcement and prosecution, cleanup, and program maintenance.
- Effective enforcement programs must be coordinated with existing solid waste services and understood as part of a comprehensive program.

 \P Did you know? Illegally dumping into rivers and streams can clog storm water management systems causing flooding.

Introduction

One of the key tasks facing local officials once they have decided to establish an environmental enforcement program is the selection of the most effective management structure. This section of the resource guide will discuss several of the options available to local governments when deciding on the type of management structure to put in place and will provide a description of the key job positions

that will need to be created in the newly formed environmental enforcement program. A listing of the various responsibilities associated with each of these key jobs is also provided. This section also describes the responsibilities of several state and federal agencies that have a role in environmental enforcement matters.

MANAGEMENT STRUCTURE

The local government will be provided with a wide range of options to select from when deciding on a type of management structure. During the development of this resource guide the authors



Mr. Bradley Friedhof of the Johnson County Conservation Board patrols over 1,100 acres of state park, often finding illegally dumped residential waste and white goods in secluded areas.

surveyed (via phone and/or in person) the management of approximately 40 different environmental enforcement programs. While there were a wide variety of management structures utilized, the authors were able to identify several that were more widely used.

The authors would also like to emphasize that local governments will need to consider more than "where" the environmental enforcement program is located within the city or county government. In addition, it is critical to maintain effective communications between the various departments within

The purpose of this resource guide is to provide local governments with a resource to develop the tools to combat illegal dumping in their area.

-Mel Pins, Iowa Department of Natural Resources

the local government that are involved in the battle against illegal dumping. Most governmental services are typically provided by the resources located within one department (police, sanitation, fire, etc.). However, because multiple

departments are typically involved in the establishment of an environmental enforcement program (prosecutors, police, sanitation, public works, etc.), the local government must maintain clear and effective communications between the multiple departments involved in the environmental enforcement program. All must clearly understand the program goals and their role in achieving success.

The prosecutor (city attorney, county attorney, and/or district attorney), enforcement (police, sheriff, and/or constable), cleanup (public works or sanitation department), education, and administration functions must maintain clear lines of communications so each department understands its duties and responsibilities. By providing clear communications the local government will increase its chances of maintaining an effective environmental enforcement program.

To read about actual cities and counties that have already implemented some of the management structures mentioned in this section, please refer to Appendix C.

Q Did you know? Holding annual community cleanup days is a good way for the community to take action against illegal dumping, and an opportunity to education the public about illegal dumping.

Listed below are the management structures most frequently encountered. "Management structure" is defined as the department within the city or county government responsible for overseeing and managing the environmental enforcement program.

Code Enforcement and Compliance Department

There were a number of cities surveyed that had their environmental enforcement program managed/coordinated by individuals within the Code Enforcement and Compliance Department. In Iowa, the City of Waterloo, operates its illegal dumping enforcement program out of the city's Code Enforcement Department. In the City of Waterloo, code enforcement officers monitor chronic illegal dumpsites as well as identify new areas of illegal dumping. The City of San Antonio, Texas assigned police officers to this department and the City of Chattanooga, Tennessee used code enforcement officers to monitor illegal dumping.

A potential drawback to utilizing code enforcement officers is their inability to carry a firearm, as well as to make arrests, or to generally enforce the state criminal statutes. The advantage is their likelihood to be more familiar with environmental law than other city or council personnel.

Public Works Department

Some cities have located the environmental enforcement program within the public works department. The City of Des Moines, Iowa has established their environmental enforcement program within the public works department. As described in a case study in Section 3, the City of Des Moines responds to illegal dumping quickly before it becomes a breeding ground for more illegally dumped material.

The City of Houston, Texas also operates a very successful illegal dumping enforcement program through their public

Case Study: The City of Waterloo, Code Enforcement Department

Code enforcement officers can often be very effective in combating illegal dumping. In Waterloo, Iowa, Virgil Carson, heads the code enforcement department in the fight against illegal dumping.

In 2002, his department filed 15 citations for illegal dumping, all of which led to convictions. The majority of the illegal dumper convictions have occurred due to the success of finding evidence (addresses, etc.) in the dumped material. Mr. Carson also monitors chronic illegal dumpsites at night. His monitoring efforts come in the form of stakeouts. Mr. Carson has observed illegal dumpers during the night and daytime from various distances.

Mr. Carson attributes the success of his program to support from the district attorney's office, judges and other departments in the city.

Stakeouts have the potential to be very effective in monitoring chronic illegal dumpsites. Since illegal dumping can occur during the late-evening hours, equipment that allows one to see at night, and motion sensitive cameras strategically placed near the dumpsite can often increase the effectiveness of stakeout investigations.

works department. Houston has formed a *joint environmental enforcement program* consisting of code enforcement inspectors, environmental quality specialists, and police officers located within the Neighborhood Protection Division of the Public Works Department. This program is fortunate that a local county prosecutor is dedicated to dealing solely with environmental cases, so the officers are assured that their cases will receive a high priority.

⁴ In describing management structures, the authors have listed the department within the city or county government that is responsible for managing the environmental enforcement program. While an environmental enforcement program will require the provision of numerous services from various departments within the city or county government (health, law enforcement, prosecution, courts, public works, etc.), there is typically one department which is charged with administering, coordinating and managing the program.

The potential advantages of locating program management within a public works department are similar to those listed for sanitation departments since personnel may already be familiar with local dumping issues and involved in roadway cleanups. However, unless illegal dumping is made a departmental priority, it may be put on the "back burner" as more established programs compete for limited resources.

Health Department

Some city and county governments have elected to operate their illegal dumping enforcement program within the city/county health department. Although city health departments are not as prevalent as county health departments, both do exist in Iowa.

For example, the Scott County Health Department, in Iowa, which serves both city and county residents, manages the local environmental enforcement program. Health investigators are used to responding to and investigating illegal dumping activities within the community. Health investigators also respond to all citizen requests and complaints. An example of a city health department managing the illegal dumping enforcement operations is in the City of Council Bluffs, Iowa. The Department of Public Health publishes informative brochures on the negative effects of illegal dumping as well as dedicates a code enforcement officer specifically to junked cars within the city. For more information on the City of Council Bluffs' efforts, see the case study in Section 3.

"Once you let the dumper know he's been caught and warn him of the penalties of illegal dumping, he usually cooperates pretty quickly."

-Virgil Carson, Code Enforcement Officer, City of Waterloo, Iowa



White goods, like the water heaters and appliances pictured above, can be dangerous to neighborhood children and breed harmful diseases.

Potential

advantages of this structure are that health department personnel are generally familiar with environmental laws and the importance of identifying and rectifying violations. The department may also have an established relationship with local law enforcement to

assist in handling potentially dangerous investigations or criminal offenses. A disadvantage is that code enforcement may continue to be perceived as having a higher priority versus environmental enforcement. In at least one case reviewed for this resource guide, an environmental enforcement officer working in another department was assigned to assist in code enforcement activities which were seen as a higher priority than his illegal dumping work.

Sanitation Department

Another option is to have the environmental enforcement program managed by the sanitation department. In rural Humbolt County, Iowa, the county sanitarian is charged with enforcement of the county's illegal dumping ordinances and holding countywide cleanup events throughout the year.

An advantage to having the program managed from within the sanitation department is that it is easier to coordinate the cleanup of illegal dumpsites and other environmental enforcement activities with the sanitation crews that are housed within this department. A potential disadvantage is that unless the

Q Did you know? Getting political figures to "buy-in" to the problem of illegal dumping can possibly lead to changes in ordinances and increased commitment to illegal dumping enforcement.

sanitation department makes environmental enforcement a priority, this program can potentially receive less attention than other solid waste services, which are perceived as the sanitation department's primary tasks (solid waste collection, disposal, recycling, etc.). In addition, the program may become perceived as more of a cleanup program than a prevention program.

Sheriff's Department

Some county governments have decided that the environmental enforcement programs are most effective when managed in the sheriff's department.

"The goal of the Litter Enforcement Award is to generate interest in the enforcement community and to reward those programs who are actively addressing the problems of litter and illegal dumping."

- Gary Schnepf, Director, Keep Iowa Beautiful

Potential advantages of this arrangement are that sheriff's deputies are trained and experienced in investigations and are commissioned peace officers, which relieves the need to seek law enforcement support from other departments. Using law enforcement officers can also lend a certain amount of credibility to the program, and is therefore more likely to have an impact on the offenders and the

community. A potential disadvantage is that sheriff's deputies may not be comfortable with the emphasis on public education and communication involved in environmental enforcement duties. However, this disadvantage can be easily avoided by selecting the "right" peace officer to work in environmental enforcement. This individual would enjoy public speaking and be comfortable giving presentations in the community.

In Marion County, Iowa, the Sheriff's Department investigates and pursues illegal dumping cases on an on-going basis. The sheriff and his deputies have an excellent relationship with the county attorney

and support from the Marion County Board of Supervisors.

County Board of Supervisors

In the State of Iowa, counties have the option, under Section 331.206, to create a board of supervisors in district or at large. The board of supervisors has no direct connection with illegal dumping enforcement programs, however the board of supervisors appoint the members of the board of health.

Many of these illegal dumping enforcement programs located at the county level operate under the direction of the board of health, which can hire an environmental health specialist or sanitarian.



Supporting the Adopt-a-Highway program in your area is a good way to involve communities in keeping litter and illegally dumped items off state highways in Iowa.

Potential advantages of this structure are that personnel are environmental health specialists and the program budget is controlled and protected by the board of supervisors. Potential disadvantages include the strain placed on one precinct's budget for a countywide program and the tendency to serve the parent precinct.

Q Did you know? By creating an illegal dumping task force, cities and counties can more easily coordinate the cleanup and enforcement of illegal dumpsites, thereby opening up lines of communication and cooperation.

County Attorney's Office

Fannin County, Texas has established its environmental enforcement program within the county prosecutor's office. This approach has ensured that in Fannin County the prosecution of environmental crimes will be vigorously pursued by the county prosecutor. However, this management structure still does not guarantee that environmental criminals will be successfully prosecuted. For instance, if the enforcement officer is not vigorously pursuing the apprehension of these criminals, and the judge is not passing down "stiff" sentences, illegal dumping will continue to be a problem in the county.

County Conservation Board

County conservation boards, under Section 350 of the Iowa code, have the ability to manage state and county parks as well as assisting in the education of citizens about illegal dumping. Working in conjunction with other county or city enforcement programs, county conservation boards can be a valuable resource and an integral part of a regional illegal dumping enforcement effort.

The Johnson County Conservation Board in Johnson County, Iowa has monitored illegal dumping patterns on its land and has cited many illegal dumpers. Recently, the commission has erected an education



Working with the solid waste agency in your area to sponsor public service announcements or sponsor an illegal dumping hot-line is a good way to advertise the dangers of illegal dumping and build interdepartmental relationships.

center where information on illegal dumping and brochures can be distributed to the public.

Solid Waste Planning Authority

Many communities have created solid waste planning authorities, which are responsible for the management of all solid waste collection within that district or authority. In the State of Iowa, these entities are established through cooperation between cities and counties in that region. In some cases these solid waste planning authorities have implemented programs or are developing plans to address illegal dumping in that area.

For example, the Metro Waste Authority conducts several solid waste management functions for the citizens of Polk County and outlying communities. These activities include operating a residential scrap tire program and a special waste assistance program for businesses and other commercial entities. The Waste Commission of Scott County coordinates programs with local governments to encourage the proper disposal of solid waste in an effort to prevent illegal dumping. This includes providing pamphlets which outline proper disposal options for various solid wastes to all citizens annually.

Solid waste authorities have the advantage of dedicating resources to an array solid waste issues, including illegal dumping. In addition, their geographic boundaries can be drawn to meet regional illegal dumping needs. However, disadvantages include the fact that authorities may not have the

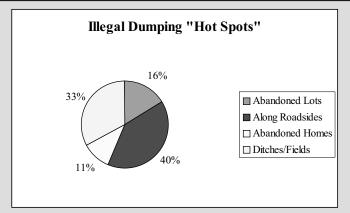
Q Did you know? Illegal dumping can substantially reduce property values and communities can quickly become unattractive to commercial and residential developers.

taxing or revenue gathering capability to sufficiently finance illegal dumping prevention along with solid waste programs.

Coordinated Effort by Multiple Governmental Agencies

In some parts of the State of Iowa, local governmental agencies have teamed up to develop a comprehensive countywide environmental enforcement program. This will often include coordination between the city and county governments within a particular region. In other cases, multiple counties have teamed their efforts in combating illegal dumping.

For instance, four counties in Iowa, Appanoose, Davis, Lucas, and Monroe (ADLM) coordinate to battle illegal dumpers regionally. One way the ADLM program has been successful, is through educating smaller counties on the hazards of illegal dumping and helping to establish accessible citizen collection stations in rural areas of the county.



Survey Analysis – DNR Survey Illegal Dumping – Where does Illegal Dumping Occur in the County?

From data obtained by the DNR's Illegal Dumping Survey, over 40 percent of illegal dumping occurs along roadsides and 33 percent occurs in ditches and fields. Environmental enforcement programs should monitor these areas for illegal dumping regularly to make sure these areas do not become chronic illegal dumpsites.

Factors to Consider when Deciding on a Management Structure

This listing is not meant to imply that these are the only management structures that may be used in establishing an environmental enforcement program. Rather, these are the programs that reappeared with some regularity during the survey. It is important to emphasize that there is no "right" or "wrong" management structure when it comes to creating an environmental enforcement program. Each government will need to look at local factors when determining what management structure is appropriate for their community.

Several factors, which will affect the type of management structure ultimately selected include the following:

- TYPE OF GOVERNMENT BODY (CITY, COUNTY, SOLID WASTE DISTRICT, WATER AUTHORITY, NON-PROFIT ORGANIZATION)
- ABILITY FOR LOCAL GOVERNMENT TO DRAFT ORDINANCES
- DECISION TO USE COMMISSIONED PEACE OFFICERS VS. CODE ENFORCEMENT OFFICERS
- WHETHER SOLID WASTE COLLECTION SERVICES ARE PROVIDED BY THE LOCAL GOVERNMENT VERSUS BEING CONTRACTED OUT TO A PRIVATE OPERATOR
- LOCAL GOVERNMENT'S LEVEL OF FINANCIAL COMMITMENT TO THE PROGRAM
- ANY "POLITICS" INVOLVED IN ESTABLISHING THE PROPOSED STRUCTURE

Q Did you know? Illegally dumped materials often consist of construction and demolition debris, junked vehicles, furniture, yard waste, residential waste, medical waste, and hazardous waste.

ROLES OF REGIONAL, STATE AND FEDERAL AGENCIES

While the focus of this resource guide is on helping local governments to establish and operate environmental enforcement programs, there is still a need to identify the roles of state and federal agencies involved in environmental enforcement matters. The following list details what roles these

organizations have with regard to the enforcement of illegal dumping crimes in the State of Iowa. In many cases, law enforcement personnel from the local, regional, state and federal levels can improve their productivity by coordinating their activities with each other. Appendix F contains specific contact information for these agencies on a statewide and regional basis.

DNR Emergency Response Unit

The Emergency Response Unit provides 24-hour technical assistance for response and remediation activities related to chemical spills and hazardous conditions. The Unit coordinates larger incidents in conjunction with field office staff. They also participate in the development of plans for regional response to emergencies, such as a spill on the Mississippi River.

DNR Field Offices

Each field office has staff who conduct investigations on solid waste management issues, including illegal dumping. Solid waste investigators are responsible for the criminal and civil investigations of solid waste facilities, operations, illegal dumps and waste tire sites.

Staff in the agency's field offices primarily conduct these investigations. After completing investigations, field office staff attempt to gain compliance. If compliance is not

Case Study: Scott County Health Department

The Scott County Health Department in Scott County, Iowa has implemented strategies to inform and educate the public about proper disposal methods for waste.

Located in a yearly publication that is distributed to every resident in the county, information outlining where and when to dispose of various types of waste are included in the booklet.

Mr. Larry Linnenbrink, Environmental Health Coordinator, believes that programs that are administered at the county level are able to reach more people and can effect communities at a regional level. He also believes educational booklets on proper disposal methods can positively impact the amount of illegally dumped material in the cities and county.

Often, by acknowledging the fact there is a "right" and a "wrong" way to dispose of various materials will have a strong effect on changing peoples behaviors. The goal of any educational campaign should be to change attitudes and behaviors in the long term, not just one day out of the year.

achieved, cases are referred to the DNR's Legal Services Unit to be handled administratively. If compliance is not achieved or circumstances warrant, the case is referred to the Attorney General's Office or to local prosecutors for either civil and/or criminal prosecution. In some cases, field offices will coordinate directly with local governments to enforce compliance issues.

There are six field offices in the State of Iowa, a listing and contact information regarding each office is located in Appendix F.

DNR - Conservation and Recreation Division

The Conservation and Recreation Division of the DNR is made up of different bureaus which manage the many state parks, natural preserves, as well as protect the wildlife in Iowa.

 Q Did you know? Illegal dumping is an offense that could carry fines of up to \$10,000 and jail time.

Park rangers or park managers are responsible for enforcing state laws in the 71 state parks and historic sites, in Iowa. Illegal dumping cases are handled individually by each state park. Park rangers

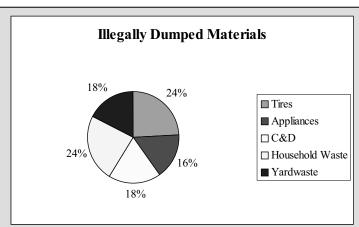
will generally develop cases, and then turn them over to local prosecutors. For the most part, park rangers have working with successful in local prosecutors because they are able to relationships with develop specific individuals. Rangers also work with youth and adult groups holding clean-up events throughout the year.

"I see things dumped along the county roads all the time. We need to come up with some solutions for (scrap) tires. People will spend five bucks for lottery tickets but not to dispose of their tires."

Mary Stringer, City Clerk, City of Otho

The Conservation and Recreation Division is also responsible for the protection of wildlife in the State of Iowa. To carryout these responsibilities, the department employs approximately 97 conservation officers, who are enforcement personnel with full police powers. As one of their duties, conservation officers enforce the state's illegal dumping and litter laws when violations occur on state-owned land. Conservation officers typically coordinate with local prosecuting attorneys and associate circuit court judges.

The Law Enforcement Bureau of the Conservation and Recreation Division also hires seasonal water patrol officers to monitor activities on the State of Iowa's many lakes and rivers during the busy summer months. These officers have limited police powers, but have the ability to issue scheduled littering citations in state waters and land. The Water Patrol also monitors rivers and lakes to advise the DNR conservation officers of any pollutants that might be contaminating state waters. Each



Survey Analysis: DNR Illegal Dumping Survey – Commonly Dumped Materials

The chart above shows the five most common materials dumped in cities throughout Iowa. While no single material is dumped more frequently than others, the data indicates that nearly 50 percent of the material dumped in cities is either household waste or tires. White goods, yard waste and construction and demolition debris make up the remaining 50 percent of illegally dumped items.

Household waste and tires are often breeding grounds for disease carrying rodents or insects and can often give off foul odors in the summer. summer 20 new water patrol officers are hired.

Iowa Attorney General's Office

The Attorney General's Office aggressively protects the state's natural resources. Attorneys take legal action to stop pollution of the state's air, water and soil. Polluters are penalized through fines, penalties and, in the most serious cases, incarceration.

The Environmental Protection Division of the Attorney General's Office represents the DNR regarding use of the state's air, land and waters. The division is responsible for enforcement cases, including administrative appeals before the DNR's commissions. Enforcement litigation is filed primarily in state courts to seek preliminary and permanent injunctions to assure compliance with

Q Did you know? Scrap tires can often trap stagnate water, which act as a breeding ground for mosquitoes in the summer.

Iowa's environmental laws. The division also obtains civil penalties and recovers costs and damages for the DNR.

Iowa State Patrol

Troopers of the Iowa State Patrol monitor Iowa's numerous state highways. The primary responsibilities of the State Patrol are to promote safety on Iowa roadways and to enforce the traffic laws. Among the laws enforced by troopers are for littering and abandoned vehicles. Local sheriff and police departments can contact their local State Patrol offices to coordinate specific needs.

"We as a nation, state, county, and city need to address the problem of litter and illegal dumping."

Mayor Dan Dawson, City of Princton

The Iowa State Patrol's Airwing Unit is made up of officers with their pilot's license who can be contacted to work with local environmental enforcement officers in illegal investigations in rural areas. The airwing unit is

uniquely equipped to fly very low, over a dumpsite in the evidence gathering phase of an investigation. Contact: Captain Robert Messelheiser, Iowa State Patrol: Airwing Unit, 515-281-5824.

From January 1, 2000 to December 31, 2002, a total of 181 illegal dumping related citations were written by various law enforcement officers according to data provided by the Iowa Criminal and Juvenile Justice Planning Division.

Iowa Department of Corrections

The Iowa Department of Corrections (DOC) could provide assistance for local governments to help cleanup illegally dumped material on public grounds using prison inmates. The DOC would be receptive to requests by local governments and would give consideration to all inquires. Assistance, however, cannot be given to the cleanup of dumpsites on private property or any cleanup that would require the use of heavy machinery. Contact: Fred Scaletta, Public Information Officer, 515-309-3130 ext. 307.

Iowa Department of Transportation

The Iowa Department of Transportation (IDOT) is responsible for maintaining approximately 176,500 acres of right of way. Much of this consists of the roadsides along the highway. In 2000, Iowa DOT employees spent 3,768 hours disposing of trash picked up by Adopt-A-Highway volunteers with an additional 18,133 hours spent picking up litter from the roadways. The department encourages local governments and citizens to contact them about coordinating efforts to maintain rights of way in the State of Iowa.



The Iowa Department of Transportation has many trucks, like the one pictured above, to clean up litter and illegally dumped

United States Environmental Protection Agency (U.S. EPA) – U.S. EPA Region 7

The Criminal Investigation Division of the U.S. EPA is responsible for enforcing federal environmental laws. The U.S. EPA deals with cases that cause serious impacts to safety, human health and the environment. Examples of cases the U.S. EPA could have an interest in typically

Did you know? Illegal dumpsites give off foul odors, and when burned, can emit toxic fumes into the atmosphere.

involve the dumping of large quantities of hazardous materials into bodies of water. The U.S. EPA encourages local governments to notify them about cases. After receiving information about potential cases, the U.S. EPA will screen the information and open criminal investigations for the most serious cases.

Civil Air Patrol

The Civil Air Patrol (CAP) is an auxiliary of the United State Air Force, which can provide air support during emergency management situations or environmental violation investigation. While the Civil Air Patrol is prohibited from aiding in the surveillance of an individual, they can aid in the investigation of illegal dumpsites. The CAP has digital photography equipment that can take pictures during day or night. Contact: Russ Smith, Iowa Wing Commander, 563-344-6809.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Army Corps) requires landowners to obtain permits to excavate in or discharge dredged or fill material into a water body of the United States. Possible examples that would require a permit include dumping significant volumes of materials such as concrete, asphalt or tires into a creek or wetland area. When the Army Corps identifies a possible violation, the case can be referred to the U.S. EPA or directly to a federal magistrate. Local governments should contact the Army Corps about possible permit violations.

JOB DESCRIPTIONS FOR NEW POSITIONS

When creating a management structure, the local government will need to consider the types of <u>new</u> job positions, which must be created. Local governments should look to hire new positions on a full-time basis. However, in creating new positions, local governments may not have enough funding to hire personnel on a full-time basis. In these cases, the local government could consider hiring someone on a part-time basis or sharing an employee with another program area. The positions listed below are designed to encompass the assignments and duties involved with operating an environmental enforcement program. The positions are as follows:

Administrator

Duties will include, but will not be limited, to the following:

- ESTABLISH A BUDGET FOR THE ENVIRONMENTAL ENFORCEMENT PROGRAM AND ENSURE CONTINUED FUNDING FOR THE PROGRAM.
- COORDINATE THE EDUCATION OF THE GENERAL PUBIC, LAW ENFORCEMENT OFFICERS, PROSECUTORS, AND JUDGES.
- COORDINATE THE ENVIRONMENTAL ENFORCEMENT PROGRAM WITH EXISTING SOLID WASTE PROGRAMS IN THE LOCAL GOVERNMENT'S REGION.
- DEVELOP AND UPDATE A DATABASE WHICH TRACKS THE OPERATIONAL PERFORMANCE OF THE PROGRAM (NUMBER OF CALLS FROM CITIZENS, NUMBER OF ARRESTS, NUMBER OF CONVICTIONS, NUMBER OF ILLEGAL DUMPSITES CLEANED UP, ETC.).
- COORDINATE OTHER ADMINISTRATIVE DUTIES AS REQUIRED.

 \P Did you know? Illegally dumped materials degrade and seep into the soil, often this material may be toxic.

The administrator may be an environmental enforcement officer who is assigned significant administrative duties.

JOB DESCRIPTIONS FOR EXISTING POSITIONS

Environmental Enforcement Officer

Duties will include, but will not be limited, to the following:

- EDUCATE THE PUBLIC WITH REGARD TO ILLEGAL DUMPING THROUGH THE FOLLOWING:
 - PRESENTATIONS AT SCHOOLS
 - PRESENTATIONS TO CIVIC ASSOCIATIONS (LIONS CLUB, ETC.)
 - PRESENTATIONS TO NEIGHBORHOOD ASSOCIATIONS
 - PRESENTATIONS AT COUNTY FAIRS, COMMUNITY EVENTS, ETC.
- EDUCATE OTHER LAW ENFORCEMENT OFFICERS WITH REGARD TO ILLEGAL DUMPING WHAT TO LOOK FOR, AND WHO TO REPORT IT TO.
- RESPOND TO ILLEGAL DUMPING COMPLAINTS (THOSE RECEIVED FROM CITIZENS AS WELL AS OTHER LOCAL LAW ENFORCEMENT OR AGENCY OFFICIALS).
- INVESTIGATE ILLEGAL DUMPING CRIME SCENES (SEARCH FOR CLUES, OBTAIN EVIDENCE, ETC.).
- PATROL AREAS KNOWN FOR ILLEGAL DUMPING ACTIVITIES.
- TESTIFY IN COURT.
- CONDUCT SURVEILLANCE OF SUSPECTED CRIMINAL ACTIVITY.
- OBTAIN AND SERVE SUBPOENAS.
- MAKE ARRESTS.
- INTERVIEW SUSPECTS.
- REMAIN KNOWLEDGEABLE ON ALL APPLICABLE ENVIRONMENTAL LAWS IN THE STATE OF IOWA.

In addition to the positions listed above, a number of existing employee positions will need to coordinate their current activities with the additional responsibilities arising from their involvement in the environmental enforcement program. Based on the magnitude of their involvement, the time commitments may be such that the local government will have to hire additional staff. The current positions are as follows:

Prosecutor

This person will be responsible for pursuing legal action against the person who has been identified by the environmental officer as having violated illegal dumping laws. Prosecutors have the option of either seeking criminal prosecution or filing civil law suits. The prosecutor will also be essential in helping to educate the judges as to the existing environmental laws within the State of Iowa. The importance of having a prosecutor willing to pursue environmental crimes cannot be emphasized

A Did you know? Over 260 million waste tires are generated each year in the U.S., nearly 3 million of which are generated in Iowa along.

enough. If the local government does not have a prosecutor willing to pursue these cases the problem of illegal dumping will never be resolved within the region.

Judge

This person will be responsible for enforcing the criminal and civil environmental laws of the State of Iowa and ensuring that appropriate fines and jail time are distributed to those guilty of committing illegal dumping crimes.

The importance of educating judges with regard to illegal dumping cannot be underestimated. In recent years a municipal judge in Dallas, Texas dismissed hundreds of dumping-related citations because he said they should have been filed in state court.

Cleanup Crews

These crews will be responsible for cleaning up the illegal dumpsites and posting signs to discourage further illegal dumping. Most likely, these crews are already cleaning up illegal dumpsites within the city or county. However, in addition to cleaning up these sites, they need to begin documenting the number of sites cleaned up monthly, the types of waste at each site, and the estimated cubic yards or weight (actual if weighed).



Old barrels should be handled with extreme caution and could potentially contain toxic material.

SYNOPSIS

- Management structures vary widely: from city to county to interagency and from civilian to law enforcement control.
- Common features include: involvement of peace officers, involvement of other governmental
 agencies, involvement of the courts, and the need for good communications among all those
 involved.
- Factors influencing the choice of management structure include: type of governmental entity, available solid waste services and providers, level of budgetary support for the program, and ability to create necessary interagency relationships.
- New job positions created by illegal dumping programs are environmental enforcement officers and program administrators.
- Existing job positions that will be impacted or modified by the program include prosecutors, judges, and cleanup crews.

Q Did you know? The health risks involved with illegal dumping include: drinking water quality issues related to runoff pollution, habitat/breeding grounds for mosquitoes and rats, and direct contact exposure to sharp objects, medical wastes, caustic substances, and fire.

Introduction

Education is imperative for any successful environmental enforcement program. It promotes public awareness about illegal dumping, provides information about legal options for disposal and recycling, and encourages public cooperation in identifying illegal dumpsites and prosecuting illegal dumpers. Education also helps build consensus among local decision-makers and judges about the importance and value of such programs. Without education, even good enforcement efforts may fail to achieve the public and political support necessary to stay funded and operational.

Education needs to begin early and continue for the life of the program. before environmental enforcement officers are hired it will be necessary to educate key decisionmakers about the need to do so. The information and materials gathered for such presentations can be used again

"The main causes of dumping were lack of convenient legal alternatives, lack of public awareness of the issue, lack of judicial understanding of environmental laws and, consequently, low fines."

-Mark Vigiano, Executive Director, PhilaPride

to announce the program to the public in the form of press releases or handouts. As the program matures, its daily activities should be used as public education opportunities—hiring the first (or second, or third) environmental enforcement officer, receiving grant funds, giving presentations at local schools or civic organizations, conducting a community cleanup day, or successfully prosecuting a case.

A common misconception is that public education has an endpoint. In fact, education should never stop. It functions to tell new residents, new community leaders, and successive classes of school children about the program while reinforcing the message for those who are already familiar with it. Although it is best to begin an education program early and to make use of it often, it is never too late to start.

The value of public education is well known to those who are most familiar with environmental enforcement issues. Numerous state and local governments have identified increasing public awareness as one of the primary approaches needed to solve illegal dumping problems. When Keep America Beautiful convened a nationwide anti-dumping discussion group in 1993, the participants concluded that "the main causes of dumping were lack of convenient legal alternatives, lack of public awareness of the issue, lack of judicial understanding of environmental laws and, consequently, low fines.",5

What follows is a general guide to developing a public education plan which will support an environmental enforcement program. Local needs and circumstances will affect the scale and scope of the education plan, however, all general topics below should be considered.

BUDGET

Adequate funding for education is often overlooked in environmental enforcement budgets. While officers and equipment demand the majority of the budget, some funds should be allocated specifically for education. As a rule of thumb, the public education budget can be pegged at five to ten percent of

⁵ A Public Communication Plan for Decreasing the Municipal Cost to Battle Short Dumping in Philadelphia, 1995, by MarkVigiano, executive director, PhilaPride, a Keep America Beautiful affiliate.

the overall enforcement budget. The higher end might include start-up years, production of slide shows or videos, initial design and development of printed materials. For example, the 1997 Anti-Dumping Project budget for Franklin County, Ohio totaled \$382,476, of which \$37,500 was for public education. Items included in the Franklin County education budget were the Nail-a-Dumper hotline, public awareness materials such as city bus cards and posters, and workshops for enforcement personnel. In general, the early years of the enforcement program need a larger educational budget than later years, but every year needs some funding for education.

A sample education budget is included in Appendix A. It was developed by the authors for an

environmental enforcement program with one enforcement officer and may be considered a "base case" (or minimum) budget.

Funding for education is available through grants from various non-profit organizations, and solid waste agencies. These grants from local solid waste agencies may be available for both enforcement activities and public education, depending on the availability of funds and the activities in the program. In addition, non-profit organizations working in cooperation with local governments may be eligible to receive grants for education from private industry or public utilities.⁶ governments can research local or regional foundations that may have an interest in funding environmental projects. Funding may also be available from other sources such as the U.S. EPA, which typically provides grants through several programs.

PERSONNEL

Environmental enforcement officers are typically the program's chief educational personnel. Officers should plan to spend time in the community making presentations to adults and school children as well as to local officials and fellow officers. Community outreach by enforcement officers will continue to be important

Case Study: Solid Waste Control Officer

The Black Hawk County, Iowa Health Department is currently pursuing the establishment of a *Solid Waste Control Officer*. The position, which would be housed at the County Health Department and funded by the Black Hawk County Solid Waste Commission, would have the responsibility of combating illegal dumping in the county. Their duties are to include:

Investigate indiscriminate dumping complaints
Monitor landfill activity
Provide surveillance
Develop public education
Investigate supplemental funding
Enforce garbage and trash hauler regulations
Regulation review and adoption

Gary Wilcox, Solid Waste/Resource Recovery Administrator for the Black Hawk County Solid Waste Management Commission, has been a proponent of the establishment of this position and has worked very closely with the county health department to make it happen. This position is described in greater detail in Appendix A.

Having a full-time code enforcement officer that has been designated an "Environmental Enforcement Officer" is an excellent way to not only get the message to the entire community that you are dedicated to combating illegal dumping, but to other important individuals such as county supervisors and the illegal dumpers themselves.

throughout the life of the program. For this reason, it is highly advisable to consider communications and interpersonal skills when selecting environmental enforcement personnel.⁷

⁶ For example, Philapride, Philadelphia's Keep America Beautiful affiliate, is responsible for public education programs to prevent illegal dumping locally. It receives grant support from utility companies that have traditionally been the victims of dumping in their easements.

⁷ Some type of presentation skills course for the enforcement officers could be very beneficial and should be considered when establishing the education budget.

The percentage of time allocated by officers to education will vary with the age and size of the program. In general, the early stages of the program require the most educational support. At first, enforcement officers may spend as much time in the community talking about illegal dumping as they do in the field investigating it. Educational activities account for 20-25% of the overall man-hours in established programs and as much as 50% in newer ones.⁸

As more officers are added to the program, educational duties can be shared. Division of educational responsibilities should acknowledge individual skills. For example, some officers are more comfortable giving public presentations or working with children than others.

Among the community outreach and public education tasks to be performed are:

- WRITING AND DISTRIBUTING PRESS RELEASES
- TAKING PUBLICITY PHOTOGRAPHS
- COORDINATING THE PRODUCTION OF PRINTED MATERIALS (POSTERS, BROCHURES, FLIERS, ETC.)
- ESTABLISHING AND RESPONDING TO CALLS FROM THE PUBLIC HOTLINE
- RESPONDING TO NON-HOTLINE PUBLIC CALLS
- SCHEDULING AND DELIVERING PUBLIC PRESENTATIONS
- PRODUCING SUPPORT MATERIALS FOR PRESENTATIONS
- COORDINATING AND PROMOTING CLEANUP DAYS

Tasks not performed by environmental enforcement officers should be assigned whenever possible to personnel with the appropriate skills or be contracted out to professionals or experienced students. For example, press releases and photographs can be assigned to the city or county's public information staff or those already working with the local media. Alternatively, local college students majoring in journalism or communications can provide public education services at reasonable rates. Often high school journalism classes or yearbook staffs also have talented students who can be contacted through their faculty advisors.

It is estimated that during the first year of Harris County Precinct Three's Environmental Enforcement Division, officers spent 50% of their time on community outreach and public education.

Local non-profit organizations can be a source of individuals with experience at managing special events like cleanup days. Many cities have established relationships or contracts with non-profit environmental groups to help with public education of their recycling, anti-littering, or illegal dumping programs.⁹

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⁸ Based on information from Harris County Precinct Three's program. (An environmental enforcement program that has been very successful.)

⁹ Examples in the St. Louis area include the City of St. Louis and Operation Brightside, which provides recycling and environmental education services. Other examples from communities interviewed for this manual include, Philadelphia and Philapride (a Keep America Beautiful affiliate) and the Oregon Department of Environmental Quality and the volunteer action group Oregon SOLV (Stop Oregon Litter and Vandalism), both of which provide support for illegal dumping programs.

AUDIENCES

Designing and implementing an effective community outreach and public education program for illegal dumping prevention is like conducting a marketing campaign to introduce and promote a consumer product or service.¹⁰ The first thing to do is to identify the audience. Then, a message can be tailored to fit that audience.

For example, an electric car might be marketed to drivers as the perfect commuter vehicle, to investors as the wave of the future, to environmentalists as the next step in non-polluting transportation. In the end it's the same car, just different audiences.

Audiences targeted for environmental education messages should include:

ELECTED OFFICIALS AND STAFF
LAW ENFORCEMENT OFFICERS

CODE ENFORCEMENT OFFICERS AND HEALTH DEPARTMENT INSPECTORS
PROSECUTORS AND JUDGES
GENERAL PUBLIC
ENVIRONMENTALLY CONSCIOUS GROUPS
LOCAL MEDIA
ILLEGAL DUMPERS
LOCAL BUSINESSES

Time and consideration should be given to each audience and their particular needs or interests. For example:

Elected officials and staff are sensitive to how much taxpayer money is spent to clean up illegal dumping, how unattractive it makes the community, and are concerned with possible liability from failing to enforce applicable criminal laws. Elected officials are often responsive to the negative impact illegal dumping can have on tourism.

Law enforcement officers respond to the fact that illegal dumping is a crime and is often committed by those with criminal records. ¹¹

Code enforcement and health department personnel are often asked to cooperate in illegal dumping prevention efforts and should be approached as partners. They are often very familiar with the health and safety regulations of the state.

Prosecutors may be willing to prosecute but may be unfamiliar with environmental law and may need copies of legal pleadings.

Judges may need to be educated about the seriousness of environmental crimes and the importance of jail time and/or fines to deter violators. In Philadelphia, Pennsylvania, judges were sent copies of the city's economic impact study which highlighted the fact that without prosecution and stiff fines,

¹⁰ Illegal Dumping Prevention Guidebook, U.S. EPA Region 5, March 1998, p.21.

¹¹ Review of illegal dumping cases by the City of Houston's Rat on a Rat program indicate that illegal dumpers often have criminal records involving other serious offenses.

"dumping becomes a game" and dumpers view small fines as simply the cost of doing business while the taxpayers pick up the tab for cleaning up the mess, according to the executive director of PhilaPride.

Members of the **general public** respond to clear, direct messages that make them aware of the problem and enlist their support in identifying illegal dumpers.

Environmentally conscious groups will typically be very vocal supporters for the environmental enforcement program and can be used to assist in educating the general public.

Local media need handy reference materials and general background information that includes contact names and phone numbers and dates of upcoming events.

Illegal dumpers are almost always aware that their actions are unlawful, therefore messages should reinforce the fact that illegal dumping is a crime. Often illegal dumping is an economic choice, however, violators must be convinced that prosecution is likely and that fines will be greater than the benefits associated with illegal dumping.

Local businesses will support illegal dumping enforcement that prevents criminal competitors from illegally cutting their garbage disposal costs.

Other audiences not listed above might include the local business or religious leadership and other community decision-makers. The more key people who can be won over to the merits of the environmental enforcement effort, the better. Every program encounters challenges, but the more friends it has, the more likely the program is to overcome them. The opposite is also true. If key support is not in place, the program may not survive its challenges.



This ad appears weekly in the Council Bluffs Nonpariel. This is an example of a message aimed at the general public



The Houston-Galveston Area Council in Texas uses the cartoon character "Mulch" to teach school children about solid waste.

MESSAGES

Once the audiences have been identified, the next step is to choose a "clear and simple message to which the target audience can relate." Consider the particular needs and interests of each target audience. Involving members of the target audience in the development of educational materials can help ensure that the message is effective. Ways to include members of the target audience might include informal meetings with representatives of the target group. Meetings can be structured like focus groups in which audience members are asked for their opinions about planned educational efforts. Or, they can be asked to respond to questions, such as what they know about illegal dumping, why

they think it is important or unimportant, and what arguments or methods they think might work best to reach their colleagues.

¹² Illegal Dumping Prevention Guidebook, U.S. EPA Region 5, March 1998, p. 21.

The following are some suggested messages for the audiences identified earlier:

Since *local officials* are concerned about tax dollars, letting them know how much money is being spent to clean up illegal dump sites may help persuade them to allocate funds for prevention. Such an approach has been used in Chicago, Philadelphia, and Houston among others. ¹³ For example, Houston's Rat on a Rat brochure reads: "Nearly \$5 million of your city tax dollars are spent to clean up illegal dumping each year. And we're not talking about your average litterbug. About 160,514 cubic yards of trash are hauled away annually. That's enough trash to fill 96 football fields, lying side by side."

Illegal dumping is not just expensive; it's ugly. In Chicago, which also spends millions each year on illegal dumping, officials recognize that dumping "negatively impacts the community, taxpayers and

"Nearly \$5 million of your city tax dollars are spent to cleanup illegal dumping each year. And we're not talking about your average litterbug. About 160,514 cubic vards of trash are hauled away annually. That's enough trash to fill 96 football fields, lying side by side."
- City of Houston: Rat on a Rat Brochure

legitimate businesses" who not only pay for the clean up but are also victimized by the "unhealthy and neighborhoods" unattractive creates.14 dumping appropriate message for government officials might be "Illegal dumping costs vou" or "Keep city/county clean."

Law enforcement officers, prosecutors, and judges are all

concerned with preventing and punishing illegal activity. An appropriate message for them might emphasize the criminality of illegal dumping and the necessity to punish the culprits. For example, "Illegal dumping is a crime" or "Let criminals clean up their own mess" or "Environmental crime hurts everybody."

Code enforcement officers and health department investigators are generally more familiar with the extent and severity of illegal dumping than other audiences. They can be invaluable allies in the environmental enforcement program. Messages that emphasize cooperation or the similarity of goals are appropriate. For example, "Let's work together to stop illegal dumping" or "We're united against environmental crime" or "Illegal dumping is a threat to public health and safety." 16

It is also important to provide the general public with information about legal disposal and recycling options that are available to them. By providing the general pubic with this information, it should help reduce illegal dumping. As an example of this approach, The City of Council Bluffs, Iowa has developed and distributes a list of locations to take items like appliances, scrap tires, yard waste and other recyclable materials. A copy of this brochure is included in Appendix A.

Messages to the *general public* should be kept simple and direct. Examples of effective messages used by successful programs are:

¹³ Chicago estimates that cleaning up illegal dumping costs the city about \$11.5 million per year. An economic impact study in Philadelphia in 1995 concluded that direct costs associated with illegal dumping were more than \$5 million annually and indirect costs added millions more.

¹⁴ City of Chicago, Department of Environment Illegal Dumping Program.

¹⁵ Used in TCEQ brochure, which can be reprinted for local use. Sample A is included in this resource guide.

¹⁶ Used in Cameron County, Texas public information brochures.

KEEP KANSAS CITY BEAUTIFUL – Kansas City, Missouri
STOP TRASHING OUR PRECINCT (S.T.O.P.) – Harris County, Texas
ILLEGAL DUMPING IS A CRIME – Palm Beach County, Florida
STOP ILLEGAL DUMPING – City of Chicago, Illinois
STOP OREGON LITTER AND VANDALISM (SOLV) – Snohomish County, Oregon
ONLY YOU CAN STOP ILLEGAL DUMPING – Philadelphia, Pennsylvania

Local media are interested in a good story with a local angle. Contacts with the media should emphasize why preventing illegal dumping is important for the city/county involved. Economic impact data based on local budgets, photos of local dumpsites, and statements from key supporters among local officials or decision makers are good supporting material. Messages for local media might be: "Illegal dumping is a problem in our community" or "We're cleaning up our community."

Illegal dumpers are reached indirectly through messages aimed at the general public, but can be further targeted via businesses, which may unwittingly provide services to illegal dumpers. These include building contractors, truck rental agencies, lumberyards, and automotive shops. ¹⁷ Presentations to trade organizations accompanied with information about the anti-dumping laws and associated punishments and fines are also good preventive education. The City of Houston's Neighborhood Environmental Education Training (NEET) program hosts a well-attended evening seminar for the trade association of the automotive recycling industry. ¹⁸ Messages to dumpers usually emphasize enforcement and punishment: "Illegal dumping is a crime" or "Dumpers are aggressively prosecuted." ¹⁹

In general, messages to the general public should address three basic facts:

WHAT ILLEGAL DUMPING IS AND HOW IT IS PUNISHED.

WHAT LEGAL DISPOSAL AND RECYCLING OPPORTUNITIES EXIST LOCALLY.

HOW TO REPORT INCIDENTS OF ILLEGAL DUMPING.

In conclusion, different messages are used for different audiences but the program's most familiar, overarching messages will be those targeted at the general public. Public messages should be included on all educational materials. Other messages may be used for presentations or for targeted mailings to special audiences whose support is being sought. However, since all audiences are also members of the general public they will benefit from any public education efforts as well. Most messages listed above are compatible and can be used in combination.

Every target audience should be made familiar with the overall program goals and background information on illegal dumping. Basic background might include: *what* illegal dumping is, *why* it should be prevented, *how* prevalent it is locally, *what* are the costs associated with it, *what* are the laws

¹⁷ Palm Beach County Florida prints posters that warn against illegal dumping and posts them in county permitting and building offices, and local vehicle rental agencies and tire dealerships. The county also prints fact sheets about illegal dumping targeted at builders and contractors.

¹⁸ The event is promoted as an information session on how to avoid getting on the wrong side of the environmental laws and includes presentations by city, county and state officials.

¹⁹ City of Chicago enforcement brochure, which is included in Appendix A.

and penalties involved, and *how* the audience can help. All audiences should also be informed about legal disposal options and recycling opportunities in the area. Effective educational brochures include all of this information in an abbreviated form.

METHODS

As many methods as possible should be used to promote the environmental enforcement program.

Using a wide variety of methods increases the likelihood that a wide audience will hear the message. Successful programs combine the use of print and electronic media, educational materials, and personal contacts. More than one method is usually employed at the same time. For example, an enforcement officer may give a presentation to a neighborhood watch group, distribute an informational brochure at the gathering, and arrange for photos of the presentation to be sent to the local newspapers. Following are ways to use the various methods.

NODUMPING VIOLATORS WILL BE PROSECUTED CITY OF SIOUX CITY INSPECTION SERVICES DIVISION

This sign posted in Sioux City, Iowa has been placed at a well-known dumpsite. This message has been aimed at potential dumpers who frequent that area.

Print and Electronic Media

Print and electronic media contacts should receive news releases and photographs, which alert them to environmental enforcement activities. Visiting with local editors, reporters, and station

Case Study: Involving the Media in the fight against Illegal Dumping

The following is an excerpt from an article that appeared on Friday June 9, 2000 in the *Cedar Rapids Gazzette* written by Mr. Orlan Love.

"Department of Natural Resources officials in Johnson County say they intend to crack down on illegal dumping in state wildlife areas. "As landfill fees have increased during the past five years, we have seen the problem get increasingly worse," said DNR wildlife biologist Tim Thompson, who manages the 14,000-acre Hawkeye Wildlife Area in Johnson County. The Hawkeye area has several remote roads and parking lots favored by illegal dumpers, Thompson said. "We spend a lot of time every week picking up trash that people dump in our wildlife areas," said Thompson. If the trash overwhelms DNR Dumpsters, the state has to pay landfill fees for the refuse, he said. In effect, Thompson said, hunters are paying the costs of the cleanup because the money for staff salaries comes primarily from hunting license fees."

This article is an excellent example of how the involvement of the print media can "get the word out" on illegal dumping. It's a good idea to approach your local newspaper about running an article on illegal dumping, many times a reporter is very receptive to such an idea.

managers can help build understanding and support for the program. Include community newsletters, local magazines, and high school newspapers on the list of media contacts.

Although newspapers are more likely to cover local issues than radio or television stations, radio talk shows and local cable stations are also good targets for media coverage. Des Moines, Iowa has had a very good response from a feature story which ran on the a local news station regarding illegal dumping.

In addition, provide a list of the program's key contact people with titles, phone numbers, and e-mail, if applicable. Photos are also welcome and should be as active as possible. For example, include an enforcement officer examining materials from an illegal dumpsite instead of a shot of the dumpsite alone.

Include a fact sheet on the locations, times of operations, materials accepted, and costs associated with legal disposal facilities, citizen drop-off centers, collection stations, and recycling sites.

Invite media contacts to participate in "ride alongs." Members of the press as well as local officials and

 \P Did you know? Providing easy and accessible disposal options is an effective way to combat illegal dumping.

other community leaders should be encouraged to spend the day with an environmental enforcement officer as he or she investigates complaints. Of course, dangerous situations should be avoided.

News releases are best written by appropriate public information staff members or may be contracted out as described in the *Personnel* sub-section on the previous page. It is advisable to plan for several news releases each year and more in the formative year to build public awareness about the program. Meet with the public information staff and discuss possible story ideas for the upcoming year. Develop a calendar of events that warrant media attention. As cited earlier, these may include: hiring an environmental enforcement officer, receiving grant funds, or cleaning up a dumpsite. News releases should also feature recycling and legal disposal options. An example could be a photo of a family recycling together or a story about the how many pounds of scrap metal or newspaper are salvaged from the citizen drop-off center.

Educational Materials

Educational materials most commonly associated with successful programs include:

> **BROCHURES FLIERS POSTERS BUS CARDS BUMPER STICKERS (ADVERTISEMENTS)** STREET SIGNS **UTILITY BILL INSERTS BUSINESS CARDS**

REFRIGERATOR MAGNETS, PENCILS, RULERS, T-SHIRTS, ETC.

There are costs associated with the production of educational materials and decisions must be made about how to spend limited education funds. When choosing among the available options, ask where will it be used, who is likely to see it, how many people might it reach, can it be used with more than one audience, how long will it last, how difficult is it to distribute?

Brochures are perhaps the most common educational tool of any program because they are the most adaptable to different audiences and Several samples are included in situations. Appendix A of this resource guide. In general, brochures should be attractive and informative. Photographs or line drawings are commonly used to provide visual appeal. Desktop publishing programs make designing brochures and other print relatively inexpensive; however, material professional artists photographers or recommended to provide the kind of high quality images the public has come to expect.

Grants for Environmental Enforcement and **Education**

When the City of Council Bluffs, Iowa was faced with the problem of junked cars, Director of Public Health Donn Dierks turned to the Iowa West Foundation for assistance. He applied and received a four-year grant worth approximately \$100,000. Through this grant, the City of Council Bluffs was able to create a new Sanitarian position dedicated to the enforcement of the city's junked car ordinance. Director Dierks reported that without the funds from the Iowa West Foundation this position might not have been created.

Since cities and counties have 501c(3) status, they are able to apply for many grants that organizations make available yearly. Various casinos in the state fund these organizations, like the Iowa West Foundation, and grants are limited to certain counties in the specific region. For more information on these groups logon to: http://www.iowagaming.org

Fliers are less expensive to produce than brochures and may be the first educational piece developed in the educational program. Fliers can be reproduced on a copy machine rather than printed. However, they are usually less attractive and do not last as long since they are more easily torn and wrinkled. They are perhaps best suited to one-time uses such as special events. Fliers may also be considered a transitional general information piece for use until a brochure is produced.

Posters, bus cards, bumper stickers, and street signs create high visibility for the program because they are displayed in public areas for extended periods of time. All benefit from bold designs with short, clear messages. Posters can be displayed in city or county offices, including libraries, and in local businesses, including those where illegal dumpers are likely to see them. Bus cards are displayed inside (and sometimes outside) city buses or light rail. Other successful programs have issued bumper stickers to all waste haulers in the county. Similarly, municipal fleet vehicles might be issued bumper stickers or placards. Many cities and counties post "No Dumping" signs along roadways. Por instance, in the City of Dubuque, garbage trucks have been outfitted with stickers that announce "If you see Illegal Dumping call 589-4345", in large easy-to-read letters.

Utility bill inserts provide a way to reach all area residents through direct mail. There is often an expense involved for inserting the material into the bill envelopes. However, if the utility company is producing its own insert, it may be willing to simply include information about the environmental enforcement program at no charge. Utility companies are often sensitive to illegal dumping issues and may be willing to cooperate on other educational efforts or provide funds for prevention messages since their utility easements are often the target of such dumping.²³

Promotional materials may be produced as gifts for public presentations or at community special events. The items are imprinted with the program message and may also be used to commemorate community cleanup events. Common items include pencils, rulers, magnets, coasters, drink coozies and t-shirts.

Personal Contacts

Personal contacts are perhaps the most effective ways to promote environmental enforcement education. These include presentations to both children and adults at venues such as:

SCHOOLS
SCOUT MEETINGS
PUBLIC LIBRARY PROGRAMS
JUNIOR AND SENIOR HIGH SCHOOL SERVICES CLUBS
ENVIRONMENTAL ORGANIZATIONS (ADULT AND STUDENT)
COMMUNITY AND CIVIC ASSOCIATIONS
ADULT SERVICE ORGANIZATIONS
SENIOR CITIZENS
CHAMBERS OF COMMERCE

CHAMBERS OF COMMERCE
COMMUNITY SPECIAL EVENTS DAYS
NEIGHBORHOOD WATCH MEETINGS

²⁰ Palm Beach County Florida distributes posters to code enforcement, permitting and building offices as well as truck rental agencies and tire dealerships.

²¹ Franklin County, Ohio.

²² Franklin County Ohio uses bus cards successfully in cooperation with the City of Columbus Transit Authority.

²³ PhilaPride in Philadelphia and Oregon SOLV are both non-profits that receive support from utility companies to combat illegal dumping.

Q Did you know? Illegal dumping is often a great financial burden to the taxpayer.

Presentations to children have been a mainstay of many environmental education programs. Children are open to new ideas and often eager to act constructively to improve their neighborhoods. Children can also help build family support for programs. Recycling programs around the country have benefited from children's commitment to these programs.

When addressing children, it is important to keep the presentations relatively short, to keep the language direct and free of jargon, and to involve them in an activity, such as asking questions or singing a song. Like recycling, illegal dumping can be presented as part of the larger issues about proper handling of waste materials.

Lesson plans and children's activities that address waste issues are available from Keep America Beautiful (KAB) and the DNR. In addition, KAB has curricula for use by teachers, which supports the overall goals of environmental enforcement programs. *Waste in Place* for grades K through 6 "introduces students to litter and integrated solid waste management" and *Waste: A Hidden Resource* for grades 7 through 12, provides "an overview of solid waste and hazardous waste." Local school district administrators should be encouraged to approve the curricula for use in their schools and to send teachers to training sessions.

Getting Schools Interesting in Illegal Dumping

Leslie Goldsmith, former Environmental Educator and current Director at the Prairie Solid Waste Agency Landfill, has been actively involved in educational efforts in Union County as well as Taylor and Adams counties.

Ms. Goldsmith, since 1998, has worked with a variety of science teachers at the high school, junior high and elementary levels to educate the children about recycling and other solid waste disposal issues. Although never directly tackling the issue of illegal dumping, the message has centered on proper disposal methods as well as many health issues that are associated with solid waste. Many times, her message has been incorporated into a lesson on the environment or recycling. She has conducted tours of the landfill, and made presentations to students at the various schools.

Ms. Goldsmith recommends that environmental educators contact the *Area Education Agency* in their area if they wish to conduct educational programs in schools. A copy of the Prairie News is located in Appendix A.

Educational presentations to children are an effective way for local environmental enforcement programs to get the message out in the community about illegal dumping. Not only are children very open to new ideas, but they can also influence parents on the issue as well.

Visual aids and creative use of props can help capture and hold children's attention. For example, the new Waste Management Trailers from the DNR has a life sized mannequin and a mascot called "Aldo the goldfinch" to educate visitors on recycling and the environment. These trailers will be available in your community in the future. See the January 2003 issue of Waste Matters for more information located in Appendix A.

Fliers and brochures developed for adults can be distributed to children for them to take home. Or, a special children's brochure can be developed that is aimed at younger audiences.

Presentations to adults should also include distribution of informational brochures. Similarly, audio-visual materials are recommended for adult audiences. Slides or overhead projections or power point computer presentations are examples. A short slide show might include images of environmental officers on the job, dumpsites, a court scene, and recycling or citizen collection stations. Music can be added to the slide show to enhance its appeal. A tabletop display might be created using the same slide images or photographs. It could be displayed while a presentation was being conducted or used as

a table prop at a community event. Slide shows, like videos; can be set up in a continuous loop to attract visitors to the table where an environmental enforcement officer can discuss the program one-one.

 \P Did you know? The first Keep Iowa Beautiful chapter was established in Davenport, Iowa.

Some enforcement programs have produced videos.²⁴ Videos can be expensive undertakings and it is preferable to seek assistance from those with experience and expertise. Local cable stations may be able to assist, or experienced students from college communications or radio and television departments. Alternatively, still photographs can be used to create a short video with musical accompaniment for much less money. Considering the expense involved, a good slide show is probably the best audio-visual option for most programs

When scheduling public presentations, it is preferable to contact groups with regularly scheduled meetings or to participate in planned events rather than to hold a special meeting or create a special event. Service organizations, schools, civic associations, scout groups, etc., usually welcome outside speakers and can guarantee an audience turnout. Local newspapers often carry calendar sections, which list meeting times and contact phone numbers for community groups. A systematic effort should be made to call groups and to schedule presentations to both adult and child-based audiences.

COMMUNITY ACTION

Community action involves the public directly in the environmental enforcement program. While many of the public appearances listed above might be considered community outreach efforts, their focus is primarily educational. For the purposes of this resource guide, the author highlights two activities that require the public to do something: use a hotline to report illegal dumping and to participate in



The Nail-a-Dumper logo has been used in Franklin County, Ohio since 1992. This is an example of a simple, yet effective message aimed at the general public.

community cleanups. Both increase public awareness and understanding of the program through direct action.

Hotlines or Tiplines are one of the most important parts of any environmental enforcement program. When program managers were queried for this resource guide, many said it was central to their program's success. In one case, the entire public education program is built around it.²⁵ Hotlines enlist the public as partners in the fight against illegal dumping. Their effectiveness depends on the public's understanding what it is and how to use it. Promotional messages must be particularly memorable.

Examples of effective messages are:

TRASH PATROL – Ozark Rivers Solid Waste District, Missouri
NAIL A DUMPER – Franklin County, Ohio
RAT ON A RAT – City of Houston, Texas
SEE THIS /DO THIS (Image of illegal dumping/Image of a telephone) – City of Chicago, Illinois
IF YOU SEE ILLEGAL DUMPING (Image of an Illegal Dumper Under a Magnifying Glass) – City of Dubuque, Iowa

²⁵ Franklin County, Ohio.

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Did you know? Illegal dumps are a major cause of forest and brush fires that consume millions of acres each year.

²⁴ Newton County, Missouri and Franklin County, Ohio.

Along with the message, the phone number is also important. Some programs choose numbers that spell out words, such as Ozark Rivers Solid Waste District, Missouri Trash Patrol, which uses (800) NO2-DUMP. Whatever the phone number is, it should be prominently displayed on all educational materials. On longer print pieces, like multi-fold brochures, it may be shown in more than one place. Franklin County Ohio's Nail-a-Dumper hotline appears on the cover, inside and back of their brochure.

The environmental enforcement officer is the program's most valuable asset and the best person to "sell" the program. The role as chief educator needs to be as important as that of chief investigator. Hotlines may be dedicated phone lines or may simply be the phone number of the environmental enforcement office with an answering machine or other answering service for after hours calls. In more sophisticated systems, the line can be set up to automatically page officers when calls come in.

To get the greatest benefit from the hotline, clear, simple instructions should be provided to the public about what type of information is most helpful. This information can also be included on the program's educational brochure. The City of Chicago includes profiles of truck bodies on their

brochures to assist the public in identifying the kind of vehicle used in the illegal dumping activity. Before setting up a hotline, call other programs and listen to their messages. Then develop a message that suits local needs.

The City of Dubuque Iowa mans a trash patrol hotline. After receiving complaints from citizens, reports are forwarded to the appropriate city/county official.

Hotlines are often modeled on crime stopper programs which give rewards for successful prosecution of reported activities. St. Louis, Missouri has offered \$100 rewards for tips that lead to the conviction of illegal dumpers. Such awards encourage public reporting of illegal dumping and public willingness to give testimony to help convict dumpers.

In the future, St. Louis may not pay as many rewards as they have in the past because the city expects that people convicted of illegal dumping crimes will start to complete more public service activities, like cleaning up illegal dumpsites, as the main portion of their penalty. Without these fines, the city will not collect funds that have been used to

City of Dubuque - Illegal Dumping Hotline

In Fall 2002, the City of Dubuque, Iowa, established an illegal dumping hotline to help curb illegal dumping in the city. The city put forth an aggressive campaign, which included large roadside signs, large stickers located on the garbage trucks, and smaller stickers citizens could place on their cars, or garbage cans. A copy of this sticker is located in Appendix A. The illegal dumping hotline has also been advertised on the Dubuque Metropolitan Area Solid Waste Agency (DMASWA) website at:

http://www.dmaswa.org/illegaldumping.htm

Funding for this program was acquired through a grant from the DMASWA. The City of Dubuque wanted to model their campaign after the "Neighborhood Watch" program.

Mr. Paul Schultz, Solid Waste Management Supervisor at the City of Dubuque, described the main catalyst for the illegal dumping campaign was the city's decision to institute a Pay-As-You-Throw (PAYT) variable rate collection fee system. Many city staff members were worried that the PAYT system would cause citizens to illegally dump their household garbage.

The City of Dubuque reports they have received 50 calls over the last 3 months on the hotline. Mr. Schultz believes that in the future, with more citizens aware of the hotline, more reports of illegal dumping will be made.

Proactive measures like the one described above can prove to be an effective deterrent to illegal dumping, while instilling a sense of pride in the community. By empowering the community through the means of a phone number, by which they can report illegal dumping, citizens are more likely report illegal dumping.

Q Did you know? According to a 2002 Keep Iowa Beautiful Study – cigarette butts are the most commonly littered item in Iowa

pay rewards in the past. Because the program is well established, the city believes it can rely on people's good will to report illegal dumpers.

Cleanup events usually involve large numbers of volunteers in litter pick-up or neighborhood cleanups. Some events are held in conjunction with national or state programs such as National Make a Difference Day or Earth Day. The scope of these events varies widely. Perhaps the most ambitious is Oregon's SOLV It, a one-day annual event that has cleaned more than four million pounds of debris from illegal dumpsites and neighborhoods since 1990.²⁶

Picking up litter or cleaning up illegal dumpsites raises public awareness about the extent of the problem and improves the attractiveness of the community. On the other hand, in Philadelphia, Pennsylvania, a concerned citizens group organized an anti-dumping campaign to catch the dumpers and get the responsible parties to clean up the mess or pay for its clean up. They published a how-to manual entitled *Organizing Your Community Against Trash and Illegal Dumping*, which has many ideas that can be adapted to communities around the country.²⁷

Through its Neighborhood Cleanup program, Des Moines, Iowa has encouraged neighborhood cleanups in which residents participate in the planning activities and actual cleanup²⁸. By being involved in these efforts, neighbors have taken ownership of their communities and continue to work at keeping them clean²⁹.

Some clean up programs are designed as preventive measures. Chattanooga, Tennessee provided "Sparkle wagons" to its residents twice a year upon request. The wagon is a 20-foot trailer, which is parked at the residence for 24 hours and can be loaded with residential trash and bulky items. The city then hauls the wagon away and disposes of the trash at no charge. Like many other communities, Chattanooga also sponsors an annual community wide cleanup called Sparkle Day. Dumpsters are provided by the city and whole neighborhoods are cleaned up. These events have proved especially popular in low-income areas.

Cleanup events are good media opportunities. Lots of volunteers and lots of action are often attractive to television and radio stations as well as newspapers.



Case Study: Community Clean-up

The Johnson County Conservation Commission coordinates clean-up activities with many local adult and youth groups during the year to help keep the F.W. Kent Park's 1,180 acres clean.

Mr. Bradley Friedhof, Naturalist, helps to coordinate many of the clean-up efforts for the Johnson County Conservation Commission and says that these events not only make citizens more aware of the problem of illegal dumping, but are a great benefit to the commission staff.

The above picture is frozen river located in F.W. Kent Park, the park is home to many bald eagles and other wildlife during the winter and summer months.

Clean-up days like this are an excellent way to teach the community about the harms of illegal dumping, and the time and effort that it takes to clean up after someone else.

²⁶ Sponsored by Stop Oregon Litter and Vandalism (SOLV). There are differing opinions with regard to the "usefulness" of annual cleanups. While annual cleanups help make the community more attractive; they may also send the "wrong" message to residents.

²⁷ See Appendix A for how to receive a copy.

²⁸ Some individuals may not stop illegally dumping their waste since they know that someone else will <u>eventually</u> cleanup the site.

²⁹ See Appendix F for an article on illegal dumping in Des Moines.

EVALUATION

All public education programs should be evaluated regularly. At least once a year, consider whether educational goals are being met, materials are still up to date, resources could be allocated more effectively, and what new education ideas might be added.

In order to evaluate success it is helpful to set measurable goals. Examples of goals might be: increase media coverage by 50%, give monthly presentations to schools, visit with cooperating agencies weekly, schedule presentations to community groups quarterly. Then, at the end of the year see which goals were met and where improvement is needed.

Keep track of the number of presentations, meetings, and special events at which information about environmental enforcement was disseminated. Have the public information staff or others assigned as

Cooperation with other law enforcement officers is very beneficial. Informed officers can effectively extend the eyes and ears of the environmental enforcement program and provide assistance in identifying and arresting dumpers.

media liaisons provide copies of all press coverage on illegal dumping.

Check the validity of phone numbers and any data on printed materials to ensure it is accurate before you reprint materials. Stay in touch with other environmental enforcement programs to share educational ideas. Use target audiences again to provide feedback on educational efforts. Meet with members of the respective target groups and ask for input on improving the materials.

SUCCESSFUL EDUCATIONAL STRATEGIES

Successful programs have many things in common. Among them are enthusiastic, creative, and dedicated staff members and supportive leadership. Below are the strategies which characterize many of these programs and that may guide the development of others.

Use the Environmental Enforcement Officer as an Educator

The environmental enforcement officer is the program's most valuable asset and the best person to "sell" the program. The role as chief educator needs to be as important as that of chief investigator.

Officers will be primarily responsible for public presentations and educational efforts directed at the various audiences outlined earlier in this section, such as judges, prosecutors, local government officials and other

Black Hawk County: Promotional Materials

Black Hawk County developed several various alternative means to deliver and to inform the public about proper disposal methods for their scrap tires.

Pencils with the message "Recycle Your Used Tires Properly"

Ice Scraper with details about how to dispose of scrap tires

Brochures that provide information on proper disposal methods

Notebook Folder with facts about tires and scrap tire disposal

Printing your message on various promotional materials can often be funded by grants from various entities. Promotional materials are often used by the individual or business regularly and can influence an individual without he/she actually thinking about it.

law enforcement officers. In addition, environmental education includes presentations to children, in school settings as well as in the community. Such wide ranging audiences pose challenges that can be met with honest effort and preparation. Communications skills are also tested when answering the public hotline, responding to newspaper reporters, and soliciting advice from colleagues in other environmental enforcement programs.

Given the level of public education and communications skills required by the job, such abilities should be considered when hiring an officer.

Recruit Supporters at Court

Often the best way to reach target audiences is to use another member of the "group." Prosecutors, judges, and investigators attached to the prosecutors' offices are often more likely to listen to other legal professionals explain an issue than to those outside the court system. Many successful programs use this fact to their advantage.

For example, in Philadelphia, the district attorney was recruited as a spokesperson for the illegal dumping prevention program. She was selected because she was known as a tough prosecutor who was respected by her colleagues. In private meetings, the district attorney was given background information about illegal dumping and made familiar with the state's environmental laws. She was also presented with findings from the city's economic impact study, which suggested that the lack of

prosecution was exacerbating the illegal dumping problem and was costing the city millions of dollars. She was convinced. She became an outspoken advocate for the program and helped educate other prosecutors and judges as to the program's merits.

Similarly, Houston's assistant district attorney, whose caseload is solely dedicated to prosecuting environmental crimes, was instrumental in educating judges about the importance of hearing illegal dumping cases and in imposing stiff penalties. He and the civil prosecutors from Harris County have also made themselves available as a resource to other prosecutors in the region who are interested in pursuing illegal dumping cases.

Build Interagency Cooperation

Cooperation with other law enforcement officers is very beneficial. Informed officers can effectively extend the eyes and ears of the environmental enforcement program and provide assistance in identifying and arresting dumpers.

Law enforcement officers are often unfamiliar with criminal environmental enforcement since it is rarely taught at police academies. To encourage cooperation and understanding, environmental enforcement officers should plan to spend time educating their fellow peace officers. In Harris County, Texas

Case Study: Garbage Task Force

A measure that has been instituted in the City of Dubuque is the **Garbage Task Force**. The Garbage Task Force is an interdepartmental group that meets quarterly to discuss solid waste issues that face the city.

The task force meets quarterly, but maintains a good deal of communication throughout the year.

In addition to meetings, the Garbage Task Force keeps an electronic database of illegal dumping that occurs throughout the city. This database contains information that will aid in identifying illegal dumping "hot spots" as well as keeping tabs on suspected or convicted illegal dumpers.

A copy of the database is located in Appendix C.

Creating an interagency task force is a good way to build relationships with other departments. Not only does it establish a means of communication for the free flow of information, on certain occasions members of the task force can be called to render aid in severe situations.

three environmental enforcement officers used roll calls and special law enforcement training sessions

Q Did you know? Successful environmental enforcement must be multidimensional and must have the support of prosecutors, law enforcement, community leaders and citizens.

to spread the word about illegal dumping. In addition, materials and information received at environmental enforcement workshops can be shared with other peace officers.

Environmental enforcement programs also benefit from the support of other agencies, such as code

enforcement, health department, fire marshal, streets and sanitation, road and bridge, animal control, etc. Environmental enforcement officers who spend time educating other agency staff about illegal dumping help extend the effectiveness of their programs and build working

Program administrators or other personnel with the necessary expertise may handle other educational duties, such as writing press releases, scheduling public appearances, and planning special events.

partnerships that benefit all parties. Such educational efforts may be formal or informal, but at a minimum should provide background information about illegal dumping and how and when to contact the environmental enforcement officer. The Environmental Crimes Unit in Kansas City, Missouri benefits from building cooperation with other city departments and state and federal agencies. The Environmental Crimes Unit receives regular referrals from these departments and agencies for the investigation of illegal dumping crimes.

Target Adults and Children with a Wide Variety of Educational Materials

No successful program puts all its educational eggs in one basket. Effective education involves many



The clean-up of many illegal dumpsites often requires the use of heavy machinery, like this front-end loader. The operation of such equipment to clean up dumpsites can quickly turn into an expensive process.

different methods and many different venues. Audiences are reached at home, through their workplace, and through their after-hour activities – volunteer organizations, professional associations, churches.

Children are an important target audience. Again, they should be reached in school and through extracurricular activities like scouting or school clubs.

Good programs combine passive information sources with more active ones. Generally, all printed material is passive. Active information sharing takes place at public presentations, at booths set up during community events, or in the classroom.

Effective materials are kept up to date and periodically redesigned to keep them current and attractive.

SYNOPSIS

- Education is critical to the success of environmental enforcement programs.
- A separate education budget should be considered part of the overall program costs.
- Environmental enforcement officers will function as the key educational personnel. As much as 50% of overall man hours will be spent on education in new programs and 20-25% in

 \P Did you know? Illegal dumping "hotlines" can provide citizens with an easy way to report illegal dumping.

established programs. Environmental officers will be able to dedicate the remainder of their time to actual enforcement cases.

- Other educational duties, such as writing press releases, scheduling public appearances, and planning special events may be handled by program administrators or other personnel with the necessary expertise.
- Multiple audiences should be targeted for education, including: elected officials, government staff, law enforcement officers, code enforcement officers and health department officials, prosecutors and judges, the local media, illegal dumpers, local businesses, and the general public. Educational messages should be developed that address the interests and needs of these various audiences.
- Messages should be clear and direct, such as "Stop Trashing Our Precinct" or "Illegal dumping is a crime."
- A variety of methods should be used to get out the message including print and electronic media, and public presentations. Both adults and children should be addressed. Effective programs combine passive forms of education (brochures, fliers, posters) and more active forms (community meetings, booths at special events, presentations to school children).
- Hotlines are one of the most important public outreach tools. They increase public awareness about the program and provide valuable information about illegal dumping activity. Another method that directly involves the public is neighborhood cleanups.

Q Did you know? According to 2002 DNR Survey – The five most commonly dumped types of materials in Iowa are white goods, residential waste, scrap tires, construction and demolition debris, and yard waste.